

# MANUFACTURING EXTENSION PARTNERSHIP

## Success Stories from the Field

### Powerain Systems Inc

Minnesota Technology Inc.

#### Powerain Systems Implements Federal Lab Technology To Save \$75,000

##### Client Profile:

Powerain Systems, Inc. has produced a line of automatic, touchless, hydraulically operated car and truck washes in Tower, Minnesota since 1991. Powerain's products are simple to operate, easy to maintain, and provide less downtime with lower maintenance, longer-lasting equipment, and the highest customer throughput in the industry. Financed by private and venture capital funds, the company has grown to sales of nearly \$4 million between 1991 and 2001, and employs 18 people.

##### Situation:

Powerain Systems manufactures a standard automated car wash system attached to an overhead gantry, or metal frame. The company wanted the overhead gantry frame and track analyzed to optimize the design for its use of materials. Powerain contacted Minnesota Technology, Inc. (MTI), a NIST MEP network affiliate, to help it perform the analysis.

##### Solution:

MTI located a federal resource with expertise in design analysis at the Department of Energy (DOE)'s Sandia National Laboratory. Through its Small Business Technical Assistance Program, companies can receive limited technical assistance at no cost. The DOE program is not meant to compete with private industry and is available only to companies without the resources readily available.

MTI met with the company and captured Powerain's goals in analyzing the gantry system, which were then presented to and accepted by the DOE.

MTI submitted a CAD drawing of and supporting documentation for Powerain's gantry system to the DOE for a finite element analysis. During the analysis, the DOE conducted simulated tests of the gantry's design to analyze its material, strength, weight bearing locations, and safety load factors. The DOE completed the finite element analysis in April 2001. MTI then worked with the DOE and Powerain to transfer and begin implementing the recommendations contained in the analysis.

The finite element analysis revealed that the original gantry design was more robust than necessary because too much material was used in the frame and its beams were too thick. The analysis also revealed that there was no load on some of the frame's support members. The DOE suggested streamlining the design by reducing the amount of material used in the gantry frame and removing the



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supports that were not load bearing, which would reduce both material and labor costs.

Powerain implemented the DOE's recommendations, created a new design, and is now producing a new gantry which was launched in the summer of 2001 at a national trade show. The new design netted immediate sales for the company, and is expected to be a successful product in the future.

### **Results:**

Used federal resources to analyze and re-evaluate the product.

Utilized analysis recommendations to redesign the product.

Showcased revised product at national tradeshow.

Anticipating a savings of more than \$75,000 in material and labor costs.

Increased sales.

### **Testimonial:**

"As a small company operating in a rural area, we have limited resources, both in terms of money to spend and just plain exposure to many of the higher technologies that are available throughout the U.S. By partnering with Minnesota Technology, Inc., Powerain is able to significantly leverage its resources in the use of many of these new technologies to help make our products faster, cheaper and of higher quality. Ultimately, this makes Powerain more competitive, which in turn allows us to continue to grow and expand our sales and production capabilities."

Steve Kerr, President & CEO